The JOURNAL of GEOGRAPHY

Volume XV SEPTEMBER 1916 Number 1

THE ANDES AS A FACTOR IN SOUTH AMERICAN GEOGRAPHY

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THE Andean Cordillera is the most conspicuous physical feature of South America. It also is one of the greatest of all mountain barriers. Its length is about 4,500 miles (Lat. 11° N. to 55° S.), and for more than half this distance it is continuous at an average elevation exceeded only by the Himalayas. The Himalayan barrier, however, is continuous for only about 1500 miles, whereas the Andes are unbroken for a distance nearly twice as great. Furthermore, the position of the Andes, so close to the Pacific coast and with the very low and flat interior plains on the east, makes the relief of these mountains somewhat greater and sharper than in most of the great highlands of the world.

To cross the highland from the west, for example, anywhere between latitudes 5° and 35° S., it is necessary to make an ascent from sea level to 10,000 to 15,000 feet, the heights of the passes, within a horizontal distance of less than 100 miles in most cases. On the eastern side of the highland, similarly, a horizontal distance of but little more than 100 miles separates mountain peaks of 20,000 feet from flat plains less than 1000 feet above sea-level. With such great extent, high altitudes and marked relief, the Andean Highland must be an important factor in the geography of the continent.

The Andes, however, should not be discussed as a whole with respect to the important influences which they have exerted in South American development, because of the different characteristics and relations, from one place to another, in their great north and south extent. It is convenient to make at least three divisions, according to well-marked characteristics which distinguish each section from the others. These three divisions may be called the Southern Andes, the Middle Andes, and the Northern Andes, each division representing not far from one-third the whole length of the Cordillera. The chief distinction between sections are: (1) width; (2) altitudes; (3) development of separate ranges and plateaus; and (4) con-

tinuity, or relations to drainage. There are also from section to section differences in geological relations, climate, vegetation and other natural resources which help to accentuate the contrasts.

The Southern Andes

The Southern Andes, extending from the southern tip of the continent to about latitude 30° S. may be described, in general, as a narrow, complex range, running very nearly due north and south. Along this axis, the width of the mountain zone varies from forty or fifty miles to more than one hundred miles in some places; the width tending to increase toward the north. The summit altitudes increase from six or seven thousand feet near the southern end to the highest peaks of the continent near the northern end; Aconcagua exceeding 23,000 feet, with Tupungato and Mercedario probably reaching 22,000 feet. These, and many others ranging from 14,000 to 18,000 feet, are volcanoes, only a few of which are active. Through most of its length this mountain zone is occupied by two or more ranges, approximately parallel, with no great contrast in elevations from one range to another. For the most part the ranges stand so close together that there are few valleys of much importance, and very little development of intermontane plateaus.

As a whole, the Southern Andes are less of a barrier than either of the other two divisions, partly because the altitudes average lower, partly because the mountain zone is not so wide, and especially because low passes are much more numerous. At the northern end of this section, streams are small and few, none of them cross the Cordillera, and the passes are high, 10,000 to 13,000 feet, the most famous, Uspallata Pass, having an elevation of about 12,790 feet. From about the 38th parallel southward streams are larger and more numerous, and some of them cross the Cordillera, as a result of which there are many more passes, at comparatively low elevations, 3,000 to 6,000 feet. South of the 42nd parallel, however, the inhospitable character of the region west of the Andean crest robs most of these passes of any importance which they otherwise might have.

The results of lower altitudes, narrow mountain zone and numerous breaks in the ranges are found in the extent to which the sections along the eastern flank have been influenced by relations with Chilean settlements on the west. Between the 38th and 42nd parallels, for example, the relations with the trans-Andean districts have been on the whole more important than those with the Argentine centers to the east.

The Southern Andes as a whole do not offer attractive conditions for settlement, for various reasons, among which are: (1) the lack of plateaus between the different ranges and the limited extent of accessible valleys; (2) the extreme ruggedness of most of the mountain zone; and (3) limitations imposed by climate and its effects. The northern part is so arid that between the 30th and 35th parallels there is little or no vegetation even on the lowest slopes. From about latitude 38° southward, forests, containing both coniferous and broad-leaved species, covers both flanks up to heights of 4,000 feet or more. Aside from this forest resource, much of which, especially on the east, is difficult or impossible to exploit now, there are limited areas suitable for farming or grazing in the mountain valleys, and some possibilities of mineral resources. Remoteness from markets and difficulties of transportation have largely prevented the development of what resources the Southern Andes do possess. Mining is, of course, the least handicapped by such conditions, but in spite of evidences of minerals in various places, mining in any large way has been confined to the western flank, north of the forested zone, where copper mining is the chief activity. The 34th parallel marks about the southernmost limit of important mining development in the Cordillera.

As a result of these conditions, the southern Andean region is very sparsely populated, in fact, parts of it have been so little explored that some large areas are marked on the maps as "unexplored forests." It was this lack of detailed information about the region which led some years ago to the serious boundary dispute between Argentina and Chile. The boundary treaty (1881) provided that "the frontier line shall run . . . over the highest summits . . . which divide the waters," etc. Chile interpreted the treaty to mean the drainage divide and Argentina held that it meant the crest line of the Andes. In the sections of the highland well known at the time the treaty was made the main crest and the drainage divide do approximately coincide, but as already noted, they do not coincide in the southern section. Thus both countries laid claim to some large tracts both in the Cordillera and adjacent to the eastern flank south of latitude 40°.

On the Chilean side especially (for ten degrees of latitude) and also in part on the Argentine side (as in Mendoza and Neuquen), important settlements lie close along the Cordillera, and in places small settlements have extended into the more favored valleys or about the glacial lakes. This is most largely the case between the 38th and 43rd parallels, under the influence of somewhat larger valleys, a better climate than either to the north or

the south, and the lines of communication across the numerous low passes. Yet the largest "towns" along these mountain routes number only a few hundred persons, and in the whole mountain zone of the Southern Andes the population certainly averages lower than one person per square mile.

The Middle Andes

The Middle Andes, which extend from latitude 30° to about latitude 14° S., are sharply differentiated from the Southern Andes in topography and climate. North of the high volcanic peaks which mark the culminating altitudes of the Cordillera, the mountain axis divides, and gives three distinct lines of crests which are only approximately parallel. The major axes, one on the west and the other on the east of the highland, diverge from the southern limit of this district to about latitude 18° S. and then converge towards the north. The maximum distance between them (in the vicinity of the 18th parallel) is approximately 450 miles, giving a highland belt three or four times as wide as the widest part of the Southern Andes. Between these two marginal ranges lies a great plateau which in extent and altitude is exceeded only by the Plateau of Tibet. Across the plateau a third, and minor, range of mountains runs more or less parallel to the eastern range, and divides the Andean tract into an eastern and a western section, consisting of a plateau area and a great bordering mountain barrier, the barrier shutting off the coast slope on the one side and the interior plains on the other. The highest peaks of this section are among the loftiest on the continent, several of them exceeding 20,000 feet, as Illimani, Illampu and Sajama, while many rise nearly to that height. The seaward range averages somewhat higher because it is less broken by low passes than the eastern range, although the highest peaks in the eastern range exceed any that lie on the western side. The plateau has an average elevation of more than 10,000 feet, and much of it is between 12,000 and 14,000 feet above sea level.

The Middle Andes throughout their extent serve as the divide between the Atlantic and the Pacific drainage. The western range lying in the main within 150 miles of the coast, receives very little rainfall, has but few small streams descending its flanks, and is not broken by any river valley. As a result, the important passes lie between 12,000 and 15,000 feet above sea level. The eastern range, on the other hand, and the adjacent plateau serve as the sources of several great tributaries (as the Mamore and the Pilcomayo) of the Amazon and Parana drainage. These streams have deeply dissected the

eastern side of the highland, but the great gorges through which they cross the eastern range are so deep and steep-sided as to offer only poor lines of communication between the highland and the neighboring interior plains. Since none of these east-flowing streams head west of the central range, the western part of the plateau is a great mountain-rimmed basin, containing the famous lakes, Titicaca and Aullagas, which are among the highest known. This is one of the few areas of basin drainage in the continent, and is perhaps the least rugged part of the whole Cordilleran area.

Climatic contrasts along the Middle Andes are somewhat more important than in the section to the south. The location close to and within tropical latitudes means more agreeable temperatures at the higher altitudes; this fact and the lower precipitation account for the high snow line and the few glaciers. The western side throughout offers an extreme case of aridity and barrenness, not only on the Andine flank but also on the adjacent coast lands of Chile and Peru. Part of the eastern side is arid, but not so barren, while north of the tropic especially dense forests lie near or overlap the lower slopes. On the plateau aridity prevails, and the typical scanty vegetation of the *puna* gives the region a general aspect of barrenness and desolation.

Ruggedness, low temperatures due to altitude, and aridity combine to limit sharply the crop raising or grazing possibilities of the Middle Andes. Forest resources exist only along the eastern flank, more or less inaccessible for most purposes. Minerals, on the contrary, are present in large amounts, and for centuries have provided the chief field of development in the region; silver and gold in the earlier years; tin, copper and others more recently.

For various reasons the plateau is the most important part of the Middle Andes; it covers more than 200,000 square miles; is completely isolated by great mountain barriers, desert tracts and dense forests; and is without doubt the most conspicuous of all tropical plateaus. In it was developed, in part at least, the high native civilization under Inca influence, which was far more advanced than that reached by lowland tribes at the time of the Spanish conquest. On it now are found some millions of people (close to three millions) living at altitudes which are near the limit of permanent human habitations. Only in Tibet, in a much larger area, are such numbers living at so high elevations, while no other city of equal size (about 70,000) lies at so great an altitude as La Paz (12,200 feet), the capital of Bolivia. Along most of the Middle Andes the highland popula-

tion is more important than that on the adjacent coast slope or interior plains, the only exception being near the southern end on the eastern side, where some Argentine centers of population are larger than those in the neighboring highland. This concentration of population in the Andean zone is due apparently to (1) the unfavorable character of much of the lower lands; (2) the location of early centers of Inca activity; (3) the Spanish interest in mining and resulting regulations as to movement of population; and (4) general inertia of much of the population which tends to prevent change of abode.

The great height of the passes and width of the highland make the Middle Andes a most effective obstacle to communication and cheap transportation, especially between the Pacific coast and the interior plains, which in few places are more than 500 miles distant. This barrier influence may be illustrated by the fact that along the upper waters of the Mamore places less than 400 miles from the Pacific find their chief exit to the world by the Amazon route to Para, more than 2,500 miles away. As a result of these conditions the highland area, especially toward the north, has but little intercourse with the other parts of the countries in which it lies. Thus instead of serving as an international barrier like the Southern Andes, the Middle Andes divide countries internally, as is most marked in Bolivia.

The Northern Andes

The Northern Andes extend from about latitude 14° S. to the Caribbean coast. They are narrower than the Middle Andes, have less expansive plateaus, are somewhat more dissected and are marked by many transverse ranges and spurs. There are also, both in Peru and Colombia, great intermontane valleys parallel to the general trend of the Cordillera, and in Colombia especially these valleys divide the highlands into three sharply defined ranges. Along most of the northern section the highest peaks range between 15,000 and 18,000 feet, but in places volcanic mountains rise to about 20,000 feet.

The most conspicuous group of these loftly volcanoes stands in the Andes of Ecuador, where Sangay, Tunguragua, Chimborazo, Cotapaxi, Antisana, and Cayambe, from 19,000 to 20,000 feet high, occupy a belt about 125 miles long. The Northern Andes, however, are less continuous at high altitudes than other parts of the Cordillera south to latitude 38°, partly because there are some passes lower than 10,000 feet and partly because both eastern and western ranges are deeply notched here and there by the gorges of Amazonian and of Pacific tributaries. Thus entrance to the highland both from the east and the west is some-

what easier than in the Middle Andean section. Nevertheless the Northern Andes have been fully as effective as a barrier to communication between the Pacific coast and the interior plains, because: (1) no stream cut across the whole width of the highland; (2) the ruggedness is extreme, owing to the pressure of deep valleys and transverse ranges between the main mountains; and (3) the vegetation on the eastern side of the highland is dense up to an elevation of several thousand feet. North and south lines of communication within the highland are, on the contrary, far less difficult to travel, as illustrated by the navigability of the Maranon, Magdalena and Cauca; the lines of villages along the valleys of Colombia and Peru; and the so-called highways which parallel the mountains for hundreds of miles.

The Northern Andes are only in part an important climatic barrier. Northward to latitude 4° S. the western side is arid, as shown by a snow line 17,000 to 18,000 feet above sea-level, while the eastern side is very rainy. In the whole section north of the equator, there is not much difference at corresponding altitudes between places on the flanks and those in the highland, unless account is taken of the somewhat greater rainfall on the Pacific slope in the Colombian section. The modifications of climate due to altitude are less important than in the Middle Andes, because the plateau areas lie mainly below 10,000 feet, and the longitudinal valleys are in large part not more than 5,000 feet above sea-level, with their lower stretches showing little difference from the near-by plains.

A minor division perhaps should be made between the Colombian section and the rest of the Northern Andes. Near the boundary between Ecuador and Colombia, cross spurs unite the eastern and western mountain ranges. South of this transverse barrier, an eastern and a western range of about equal prominence are separated by sixty to a hundred miles of plateaus, valleys, and minor transverse ranges. North of this dividing line, there are three diverging mountain ranges, the central one being the most prominent. Between these ranges there is little true plateau, but instead, there are the great valleys of the Magdalena and Cauca, which by their northward courses to the Caribbean make the accessibility of the Colombian section easier than is the case in Ecuador and Peru.

In the Northern Andes there are somewhat greater contrasts than in the Middle or Southern Andes, due to the proximity of low intermontane valleys, high isolated plateaus, and lofty mountains. Heavy forests, typical of hot, rainy plains, stand in sharp contrast with the almost barren surfaces (the *puna* and

paramo tracts) of most of the plateaus which lie higher than 10,000 feet. Ease of access, relations to the outside, and character of activities developed, vary greatly from place to place. But everywhere along the Northern Andean zone the highland populations are larger than the groups t othe east and west, due largely to lack of rainfall, as on the Peruvian coast, or excess of rain and vegetation, as in most other adjacent areas. In the three republics through which the Northern Andes extend, the total population exceeds 10,000,000, more than half of which lives in the highlands, and depends chiefly on agricultural and pastoral occupations.

Conclusions

In spite of the fact that the Andes are so high, rugged and difficult of access in most sections, the density of population is much greater than on the interior plains of South America. Yet in proportion to its area and natural resources, the Cordillera is supporting only a small part of the population which it might have. Full development of resources and growth of population must depend largely on improvement and extension of transportation facilities. Good wagon roads are unknown in most sections and would be difficult to build and maintain in many sections; short railroads traverse parts of the highlands, but the total mileage is insignificant. Only one railroad crosses the Cordillera, the Transandine between Mendoza, Argentina, and San Carlos de los Andes, Chile; other lines cross the western range of the Middle and Northern Andes: as from Antofagasta, Arica and Mollendo to the Bolivian plateau; from Lima to Oroyo; and Guayaquil (Durban) to Quito. No railroad crosses the eastern ranges anywhere between the southern tropic and the Caribbean. Many proposals have been made concerning additional trans-Andean lines, but the difficulties presented probably are serious enough to prevent the carrying out of most of the projects. Taking all things into consideration, therefore, it seems likely that the Andean highland will continue largely to dominate the character of development in the western republics of South America, and will remain an effective barrier, cutting off most of the interior lowlands of the continent from the Pacific sphere of development.

LITERARY SELECTIONS AS AN AID IN TEACHING GEOGRAPHY

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EDUCATION must do more than store the mind with information, important as this is. We now recognize that the educational process must present the conditions which shall make for the development of self-reliance, of reason, of honesty and for the living of happy and useful lives.

Aside from reading, writing and arithmetic which are tools without the use of which modern civilized life is impossible, the school presents nothing which can be made more interesting, more useful or more elevating than the subject of geography. It is the *one* subject in the entire school curriculum which shows the relationships between the daily life of man in all times and all places and the world of nature by which he is so largely influenced.

Today in addition to the *where* we demand the *why*. We are striving to have the pupils understand that the earth is undergoing a process of evolution, and to have them gain some conception of the laws governing this evolution. We wish them to understand how climate, surface, soil, streams, forests and minerals modify the life of man, and how man responds to the influences of nature, taking advantage of favorable conditions and so far as possible, changing unfavorable ones. In other words our fundamental purpose in teaching geography is to enable pupils to form some reasonably adequate conception of the mutual relations between the earth and human life. This involves a study of both the earth and man. When the earth is studied as the home of man, and the responses which man makes to his physical environment are presented, geography becomes highly attractive and exceedingly valuable.

But in our commendable effort to have pupils discover relationships and develop the power of reasoning, let us not forget that the mind should be filled with beautiful and enduring pictures and that the spirit should be quickened. In a broad sense, reading and travel are the two most important channels of education, and these are stimulated by pleasing mental images. Moreover the arousing of pleasurable emotions will make for the retention of the information and relationships which we desire our pupils to acquire.

The tendency in our teaching is to slight the human phase of the subject, or to present it in the form of facts unrelated to the environmental conditions. This, in large measure, robs

geography of interest, reality and value. There is much in the form of prose and verse which, if introduced into the geography class, would illuminate geography, give an added interest to literature and history and fill the mind with uplifting thoughts. If it be true that "It is the soul that sees, the outward eyes Present the object, but the mind descries," then we should not fail to appeal to the emotions as well as to the reason, in the teaching of geography.

Only a few of countless valuable literary selections can be given here. In some cases they should be read by the pupils and in others by the teacher. They may be used to introduce topics or they may follow the study of them. Sometimes a very beautiful selection will contain statements which are entirely incorrect geographically. The teacher must weed these out, or if they are read, the inaccuracy must be corrected.

The collection of suitable selections in prose and verse involves much time. If, however, the teacher has a filing or recording system the labor is greatly reduced. Many good things can be found in "Poems of Places" a set of small volumes edited by Longfellow.

Would not a more abiding interest in the geography of the Holy Land be created by the recital of Whittier's "Palestine":

PALESTINE

"Blest land of Judea! thrice hallowed of song,
Where the holiest of memories pilgrim-like throng;
In the shade of the palms, by the shores of thy sea,
On the hills of thy beauty, my heart is with thee.

"Blue sea of the hills! in my spirit I hear
Thy waters Gennesaret, chime on my ear;
Where the Holy and Just with the people sat down,
And the spray on the dust of his sandals was thrown.

"Lo, Bethlehem's hill site before me is seen,
With the mountains around and the valleys between;
There rested the shepherds of Judah, and there
The song of the angels rose sweet on the air.

"And Bethany's palm trees in beauty still throw
Their shadows at noon on the ruins below;
But where are the sisters who hastened to greet
The lowly Redeemer and sit at his feet?

"And throwned on her hills sits Jerusalem yet,
But with dust on her forehead and chains on her feet;

For the crown of her pride to the mocker hath gone,
And the holy Shechinah is dark where it shone."

Is the climate of Palestine at all like that of California? Read the lines which support your answer. Upon what kind of ground is Jerusalem situated? Does the map give the same impression as the poem? What is meant by the "blue sea of the hills?" Are there any other bodies of water in the Holy Land?

Of the many wonderful things in India, the Taj Mahal is one of the most wonderful. It was erected by the emperor Shah Jehan for his wife, but before the completion of the building she died and so the beautiful palace became a tomb. The interior of the Taj is decorated with countless precious stones and in the pure white marble thousands of flowers have been cut in relief. It is no wonder that the Taj Mahal has been called a "poem in stone." The story of the building briefly told and the reading of the following poem would give added reality to the geography of India.

THE TAJ MAHAL

"With minarets of marble rising stately from a sea
Of the dark-leaved mangoe's foliage streaked by the jaman tree,
Up to the empyrean where the crescent glitters bright,
Calm and unchanged, still shining through the fall of Moslem might,
One majesty of whiteness the Taj of Agra stands,
Like no work of human builder, but a care of angel hands.

"Majestic shrine of other days, to thee the power belongs
To resist the flight of ages and to awe the stranger throngs;
Long as the sacred Jumna o'er its bed of sand shall flow
Thy glorious dome to heaven shall raise its massive breast of snow,
For the spirit of the monarch and the builders art combine
To guard from lightning's levin-bolt, and time's decay, the shrine." *(Anonymous)*

Locate Agra. On what river is it? By what kind of a country is the city surrounded?

In connection with a discussion of the importance of the position of the British Isles the following is interesting and instructive.

"This fortress built by Nature for herself
Against invasion and the hand of war;
This happy breed of men, this little world,

This precious stone set in the silver sea,
Which serves it in the office of a wall,
Or as a moat defensive to a house,
Against the envy of less happier lands;
This blessed plot; this earth, this realm, this England."
Shakespeare, *Richard II.*

Arndt's "What is the German's Fatherland?" expresses a love of country and a broad patriotism that commends itself to all.

"What is the German's Fatherland?
The Prussian Land? The Swabian Land?
Where Rhine's thick-clustering fruitage gleams?
Where on the Belt the sea mew screams?
Not these the land;
His is a wider fatherland.

"What is the German's Fatherland?
Bavarian, or Westphalian Land?
Where on the Dunes the wild sand blows?
Or where the Danube brawling flows?
Not these the land;
His is a wider fatherland.

"What is the German's Fatherland?
O name at length this mighty land!
As wide as sounds the German tongue,
And German hymns to heaven are sung,
That is the land;
That, German, is thy Fatherland.

"To us this glorious land is given;
O Lord of Hosts, look down from heaven,
And grant us German loyalty,
To love our country faithfully;
To love our land,
Our undivided Fatherland."

Can the pupils locate Prussian, Swabian, Bavarian and Westphalian lands? What is the "thick clustering fruitage" of the Rhine? What German river other than the Rhine is mentioned? Look at the map. What part of the river is in Germany? Why is this part a "brawling" stream?

That the city of Venice is located upon islands and that, for the most part, canals take the place of streets, should not be the chief result of a brief study of the city. The children should know why Venice was so located. They should understand the

advantage which its position gave it in early times and the disadvantage attaching to it today. It is important that the pupil really appreciate something of the charm attaching to the "Queen of the Adriatic." Longfellow's "Venice" can very profitably be used either as an introduction to the study or as a means of testing the character of the mental picture which the children have formed.

"White swan of cities, slumbering in thy nest
So wonderfully built among the reeds
Of the lagoon, that fences thee and feeds,
As sayeth thy old historian and thy guest!
White water-lily, cradled and caressed
By ocean streams, and from the silt and weeds
Lifting thy golden filaments and seeds,
Thy sun-illumined spires, thy crown and crest!
White phantom city, whose untrodden streets
Are rivers, and whose pavements are the shifting
Shadows of palaces and strips of sky;
I wait to see thee vanish like the fleets
Seen in mirage, or towers of cloud uplifting
In air their unsubstantial masonry."

There are few more beautiful rivers than the Hudson. The Hudson and the Rhine are frequently compared but the former lacks the historic associations possessed by the Rhine. Whittier, Bryant, Holmes, Curtis and others have written of the Hudson. Holmes says:

"'Twas a vision of childhood that came with its dawn,
E're the curtain that covered life's day-star was drawn;
The nurse told the tale when the shadows were long,
And the mother's soft lullaby breathed it in song.

"There flows a fair stream by the hills of the west,"—
She sang to her boy as he lay on her breast;
"Along its smooth margin thy fathers have played;
Beside its deep waters their ashes are laid."

"I wandered afar from the land of my birth,
I saw the old rivers renowned upon earth,
But fancy still painted that wide flowing stream
With the many-hued pencil of infancy's dream.

"I saw the green banks of the castle-crowned Rhine,
Where the grapes drink the moonlight, and change it to wine,
I stood by the Avon, whose waves as they glide
Still whisper his glory who sleeps at their side.

"But my heart would still yearn for the sound of the waves
That sing as they flow by my forefathers' graves;
If manhood still honors my cheek with a tear,
I care not who sees it,—no blush for it here!

"Farewell to the deep-bosomed stream of the West!
I fling this lone blossom to float on its breast;
Nor let the dear love of its children grow cold,
Till the channel is dry where its waters have rolled."

Of the Hudson Curtis says:

"Its spacious and stately character, its varied and magnificent outline, from the Palisades to the Catskills, are as epical as the loveliness of the Rhine is lyrical. The Hudson implies a continent behind. For vineyards it has forests. For a belt of water a majestic stream. For graceful and grain-goldened heights it has imposing mountains. There is no littleness about the Hudson, but there is in the Rhine ——. The Danube has, in parts, glimpses of such grandeur. The Elbe has sometimes such delicately pencilled effects. But no European river is so lordly in its bearing, none flows in such state to the sea."

Of a certain kind of literature California has an over-supply. Of a more beautiful class she will have more as time goes on. But although California is young some beautiful things have been written by her sons and daughters. A part of Brete Harte's "San Francisco" is useful in the geography class:

"Serene, indifferent of Fate,
Thou sittest at the Western Gate;

"Upon thy heights so lately won
Still slant the banners of the sun;

"Thou seest the white seas strike their tents,
O Warder of two Continents!

"And scornful of the peace that flies
Thy angry winds and sullen skies,

"Thou drawest all things, small or great
To thee, beside the Western Gate."

Why is San Francisco Bay our "Western Gate?" What is our eastern gate? Of what other continent than ours is San Francisco the "Warder?"

Some of John Muir's inimitable descriptions should be presented to every child in the upper grades. Their beauty will create a desire for more and a love for the beautiful in nature. In speaking of the work of glaciers he says:

"Contemplating the works of these flowers of the sky, one may easily fancy them endowed with life: messengers sent down to work in the mountain mines on errands of divine love. Silently flying through the darkened air, swirling, glinting, to their appointed places, they seem to have taken counsel together, saying, 'Come, we are feeble; let us help one another. We are many, and together we will be strong. Marching in close, deep ranks, let us roll away the stones from these mountain sepulchers, and set the landscapes free. Let us uncover these clustering domes. Here let us carve a lake basin; there, a Yosemite Valley; here, a channel for a river with fluted steps and brows for the plunge of songful cataracts. Yonder let us spread broad sheets of soil, that man and beast may feed; and here pile trains of bowlders for pines and giant Sequoias. Here make ground for a meadow; there, for a garden and grove, making it smooth and fine for small daisies and violets and beds of healthy bryanthus, spicing it well with crystals, garnet, feldspar, and zircon.' Thus and so it has often seemed to me sang and planned and labored the hearty snow-flowered crusaders; and nothing that I can write can possibly exaggerate the grandeur and beauty of their work. Like morning mist they have vanished in sunshine, all save a few small companies that still linger on the coolest mountain sides, and, as residual glaciers are still busily at work completing the last of the lake basins, the last beds of soil, and the sculpture of some of the highest peaks."

The Mountains of California.

No phase of geography offers better opportunities for showing the influence of environment upon human affairs and man's response to his environment, than does the study of weather and climate. A technical consideration of these topics cannot, of course, be undertaken below the high school. But even in the elementary school, considerable attention should be given to the importance of weather and climate in the various areas studied.

In all of the inhabited parts of the earth man's relation to atmospheric conditions is shown in the nature of his agriculture, stock raising, transportation of goods and people, character of houses, dress, food, and in the ordinary social and business affairs of every-day life.

It is highly important that children should know something of the work of the United States Weather Bureau as opposed to mere guess work and superstition. There are, of course, certain conditions which precede a storm and these have given rise to our "signs" as applied to weather. Let the pupils see how many

of the forty signs of rain as given by Dr. Edward Jenner, they can verify.

1. The hollow winds begin to blow;
2. The clouds look black, the glass is low,
3. The soot falls down, the spaniels sleep,
4. And spiders from their cobwebs peep.
5. Last night the sun went pale to bed,
6. The moon in halos hid her head;
7. The boding shepherd heaves a sigh,
8. For see, a rainbow spans the sky!
9. The walls are damp, the ditches smell,
10. Closed is the pink-eyed pimpernel.
11. Hark how the chairs and tables crack!
12. Old Betty's nerves are on the rack;
13. Loud quacks the duck, the peacocks cry,
14. The distant hills are seeming nigh.
15. How restless are the snorting swine!
16. The busy flies disturb the kine,
17. Low o'er the grass the swallow wings,
18. The cricket, too, how sharp he sings!
19. Puss on the hearth, with velvet paws,
20. Sits wiping o'er her whiskered jaws:
21. Through the clear stream the fishes rise,
22. And nimbly catch the incautious flies.
23. The glow-worms, numerous and light,
24. Illuminated the dewy dell last night;
25. At dusk the squallid toad was seen,
26. Hopping and crawling o'er the green;
27. The whirling dust the wind obeys,
28. And in the rapid eddy plays;
29. The frog has changed his yellow vest,
30. And in a russet coat is dressed.
31. Though June, the air is cold and still,
32. The blackbird's mellow voice is shrill;
33. My dog, so altered in his taste,
34. Quits mutton bones on grass to feast;
35. And see yon rooks, how odd their flight!
36. They imitate the gliding kite,
37. And seem precipitate to fall,
38. As if they felt the piercing ball.
39. "Twill surely rain; I see with sorrow,
40. Our jaunt must be put off tomorrow."

NAMES OF CITIES

By Frederick Homburg
Woodward High School, Cincinnati

As mankind developed both numerically and culturally, old cities grew and new ones were founded, so that the growth of towns in number and in size may be taken as a gauge of civilization. The very word "civilization" comes from the Latin "civis," a citizen; a citizen of course of the state, but with Greeks and Romans, city and state were practically identical. When a land was overpopulated the people spread by migration or colonization or conquest over outside territory and thus new towns were founded, old ones increased, and such as had been destroyed were rebuilt. New towns must be named, but the names of old ones were usually accepted by conquerors as well as by colonists, though often very much changed. Due to this conservatism, the last traces of languages of extinct peoples are found in place names. Thus we find Keltic and Latin names in France, Keltic and Slavic ones in Germany, Keltic and Danish names in England.

History is traceable in the names of places; note the periods in Alexander's conquest marked by the founding of Alexandrias; while the spread of the Greek colonies, the establishment of Carthaginian trading posts, and the success of the Roman legions, which made of the Mediterranean Sea a Latin lake, all these are recorded in the names of towns.

Whatever significance a proper name may have at first, the meaning may be lost, but the name persists. Every town was at one time new; yet in referring to a new settlement as the new town, this may become its name, and it is called so long after the prefix ceases to have any meaning. Thus we find a new city or a new town (most of them quite old) in many lands; Newtown and Newton, both names practically the same, occur in England and its colonies and in the United States. There are several towns named Neustadt (new city) in both Germany and Austria; and the country or district must be specified in addresses, if you wish letters to reach their destination. In Russia we find a number of towns called Novgorod or Novgrad (new city); and Naples in Italy means the same, for this name corrupted in English comes from Neapolis. Of course the word "New" is prefixed where a place is named after an older town. It is only natural to name a settlement a city, a town or a village according to size; hence we find these terms usually united with a distinguishing adjunct. One of the few relics of the Keltic languages in Central Europe is the word or (as it is usually part of a word)

the syllable—*dun.* This was latinized by the Romans to *dunum,* as for example Lugdunum, the old name for Lyon on the Rhone. Another form of the word is—*din;* thus Londinium the ancient London. The word still persists in Issondun (the old Isoldunum), Verdun (the old Verodunum), Dunbar, Dundee, and many others. The Germanic form is *tun* and denotes that which encloses, i. e., hedge, fence or wall; and this by metonymy, using a part for the whole, has become in Dutch *tuin,* the name for garden, and in English *town* or *ton* or *ten* or *den,* the name for a larger settlement. Hampden, Hampton, Hamilton, Newton, Washington, were originally place-names; now of course, towns are named in honor of such celebrated individuals or families.

A different North-Germanic word *hagen* and its corrupt forms mean nearly the same, i. e., a hedge; for example, Stavenhagen, Friedrickshagen, Copenhagen and The Hague. Not merely the hedge, the word *garden* itself has been used as a place name long before the garden city was ever planned. The German for garden is *garten,* which occurs in Morgarten, Damgarten, Liepgarten, etc.

If hedge and garden are used to designate a town, why not house? Just as a house affords protection to members of one or more families, so many families are housed in a town. Names such as Muehlhausen, Nordhausen, Schaffhausen are numerous in Germany; *Haus* is the same as house, and is pronounced the same. An old form of this term related to but probably not derived from the Latin is wick or wich in English, as Greenwich, Norwich, Woolwich, Ipswich, Berwick, Warwick. The Dutch spell this *wijk* and this word by itself means a city district: thus we have Rijswijk, Harderwijk, Winterswijk. The German form is *weig* or *wig* as in Bramschweig, (which the English call Brunswick), Schleswig. In the Norse languages *wick* is changed to *vik;* thus the capital of Iceland is Reykjavik, and in Sweden we have Vestervik, Waldemarsvik.

The word villa, (not Mexican but Latin), as the wealthy Romans called their country houses, is the root of innumerable city names. When such a country seat was surrounded by the huts of dependents, the group was called *villagium,* hence our name village; a dweller therein was a *villageois* or *villanus,* from which comes villain, a term in Old English law for a serf. But the real villain is the city dweller, for *ville* is the French term for city; the city hall of Paris (as those of other French towns), is called Hotel de Ville. Naturally many towns in France are called by names with *ville* as suffix: Abbeville, Joinville, Granville, Thionville, etc. In naming towns in the United States, be-

sides taking over French names such as Belleville, Louisville, we unfortunately have the maps of our states dotted with hybrid towns as Knoxville, Evansville, Jacksonville, Jeffersonville, Danville, Janesville, McConnellsville, Lopezville, etc. Their number is legion, but none is worse than the early name for Cincinnati. The plural of the Latin Cincinnatus is bad enough, but Losantiville is worse, a pedantic welding together of words from three languages to denote the city opposite the mouth of the Licking River; Licking furnishes the initial L; *os* is the Latin for mouth; *anti* from the Latin means opposed to or opposite to, and *ville* is the French for town.

In Norse lands the suffix,—*by,* connected with the verb "to build" and hence about equivalent to house, stands for town; thus we have in Scandinavia: Wisby, Oksby, Wimmerby; and in England: Whitby, Selby, Derby, Rugby, etc. A house is a home, hence we are not disappointed in expecting this word as part of many place-names. In England we have many instances of the old form ham as in Durham, Buckingham, Chatham, Birmingham; while in German it retains the spelling *heim* (which means home) as in Manheim, Hildesheim, Oppenheim, etc. Hamburg is probably the same as Heimburg, and Trondhjem in Norway would be Drontheim in German. *Dorf* is the German for village; and as every town must have been a village in its early stage, we have names such as Burgdorf, Altdorf, Hochdorf, etc. One of the large cities on the Rhine is called Dusseldorf, which means the village at the mouth of the Dussel, a small affluent of the Rhine. Dorf is *dorp* in Dutch and *thorpe* in English as Mabelthorpe.

Some small places may be called city with no apparent reason but the hope of future development. The German name for city is *stadt* which we find in Halberstadt, Darmstadt, etc. If inconsiderable towns have names with this word as a suffix, it must be remembered that its original meaning is "place," just as in the German preposition *anstatt* which means "instead of," i. e., "in place of." The English form is *sted* or *stead;* Hempstead, for example; while the Norse is *stad* or *sted* as Kristianstad, Fredrikstad, Karlstad, Orsted, Thisted.

In Greece the city was the center of life, the *pole* about which everything turned, and the Greek name for city is *polis.* When Constantine rebuilt the ancient Byzantium, it was called Constantinople, i. e., the city of Constantine. Neapolis is the new city, Metropolis the mother city or chief city, Petropolis the stone city, Necropolis the city of the dead. The meanings of Minneapolis, Indianapolis, Annapolis are readily seen. An old nick-

name for Cincinnati was Porkopolis, not because of the meaning in this word, but because there was a time when it was the great pork center.

The Latin for a community was *civitas;* there is in Italy a Civita Vecchia (old city), and in Spain a Ciudad Real. The name of a fortress of a town really means small city for "citadel" is a diminutive.

Town names frequently remind us of the fact that a fortress was the nucleus or the early limit of a place, which afforded shelter in case of danger. The name of a fortified Roman camp *castrum* (plural *castra*) is perpetuated in Lancaster, Winchester, Dorchester, Manchester, Gloucester, Worcester, etc. *Castillum,* the diminutive of castrum, is found in Newcastle and all the other "castles." The German word for castle is *burg.* One of Luther's best known hymns begins thus:

"Eine feste Burg ist unser Gott";

which is rendered: "Our Lord's a castle strong indeed." Burg is spelled *bourg* in French, *borg* in Swedish, and *burgh, borough, boro* and *burg* in English. Examples are so numerous that a selection of the best is not easy. In Germany there are Brandenburg, Wursburg, Strassburg, Freiburg and many more; in France, Cherbourg, Bourges, Bourg St. Maurice; in Sweden, Goteborg, Trelleborg, Helsingborg; in Denmark, Aalborg, Svendborg, Viborg; in England, Marlborough, Scarborough, Salisbury, Canterbury, etc. In the Slavic language *gorod* or *grad* or *gard* means city; but another meaning now obsolete, of this word is a fortified place or stockade, i. e., equivalent to *burg.* Stargard is the old city or Altenburg or Oldenburg; Novgorod is the new city or Newburg; Belgrad is the white city or Weissenburg, and Petrograd is the same as Petersburg.

Towns have been named from their situation on a river, or at its mouth, at a bridge, or a ford, or a dam, in a valley, on or by a hill. Few towns in the United States have the names of rivers; but has it ever occurred to you how many names of states in this Union are identical with the names of rivers? Take the rivers Connecticut, Delaware, Ohio, Kentucky, Tennessee, Alabama, Mississippi, Wisconsin, Illinois, Dakota (or James), Iowa, Kansas (or Kaw), Missouri, Arkansas, Colorado, Columbia (formerly called by the Indian name Oregon); and for each of these there is a state of the same name. Chicago, Sault Ste Marie, Savannah, Detroit, and Niagara are situated on rivers of the same name. Numerous examples of towns with river names are found in the Old World. Darmstadt is the city on the Darm; Dusseldorf, the village at the mouth of the Dussel. Dunaburg, the fortress on the Duna. In Holland, Amsterdam gets its name

from the dam at the mouth of the Amstel, Rotterdam from the dam at the mouth of the Rotte. In Siberia four notable instances are: Tobolsk on the Tobol; Tomsk on the Tom; Irkutsk on the Irkut; Yeniseisk on the Yenisei. If the stream is small, we have Brookdale, Millbrook, etc., and as brook is *Bach* in German, there are place-names such as Marbach, Rothenbach, Erlenbach, Offenbach, etc. Oberammergau, where decennially the Passion Play is given, is on a small stream, the Ammer. A very strange case of a city with a river name is that of the capital of Brazil. The Portuguese explorer who first entered the bay, January 1, 1515, believed he had reached the mouth of a great river, which, because of the date of the discovery he called the January River, thus Rio de Janeiro is named for a river which never had a real existence. Moscow, the heart of Great Russia and the ancient capital of the empire, is situated at the head of navigation of the Moskwa which flows into the Oka, the chief western tributary of the Volga. In Russian speech, river and town have the same name. Its citadel, the celebrated Kreml, controls the passage across the river so that Moscow derived its early importance from the fact that it was a bridge town. A bridge is of great importance, therefore towns in a number of instances have been named for them. Innsbruck is the town at the bridge across the Inn; Zweibrucken, Deux Ponts (new Latin, *Bipontum)* is a town in the Palatinate between two bridges. In France we have Pont a Mousson, Pontarlier, Pont St. Vincent; in England, Cambridge on the Cam, Boroughbridge, Woodbridge, Tunbridge, Uxbridge. Like bridges, fords had early significance, and were sure to be places of settlement; thus Hereford, Stratford, Bedford, Oxford, in England; and in Germany, Erfurt and Frankfurt. A ford for oxen is found in widely different places and in three different languages: Oxford is the name of the old English university town; Ochsenfurt the name of a town on the Main in Germany, and Bosporus, the name of the channel between Europe and Asia; the three words have the same meaning.

The junction of a river with another or with the sea is often marked by a town whose name expresses this fact: thus in England there is Yarmouth at the mouth of the Yare; Tynemouth at the mouth of the Tyne; Tweedmouth at the mouth of the Tweed, Dartmouth at the mouth of the Dart, etc.; in Germany, Gustemunde, Swinemunde, Peenemunde, Travemunde, Angermunde, Uckermunde. Ostia, the seaport of ancient Rome, was so called because situated at the mouth of the Tiber.

Among the harbor towns in England we have Newhaven, Whitehaven, Southport, Portsmouth, etc.; and in Germany: Ludwigshafen, Friedrichshafen, Wilhelmshafen, Cuxhafen; in

Holland: Zaandpoort and Nieuwpoort, the latter the same as our Newport. *Hafen* and haven are equivalents. Two towns are called haven outright: Havana in Cuba and Havre on the north coast of France; but the whole name of the port of Paris is Le Havre de Grace.

Towns are more frequently situated in valleys than on hills, for though the latter positions may be better for strategic reasons, the former are more accessible, and usually are commercial routes; but in either case the situation often furnishes the name. It may be in English *vale* and *dale*, in German *Thal*, in Dutch *daal*, in Norse *dal*. The ideal country for valley towns is mountainous Switzerland, where are found Turbenthal, Kranchthal, Klenthal, Isenthal, Langenthal, etc., but even in Holland we have Roosendaal and Veenendaal; and in Scandinavia Arendal, Mandal, Dalen, etc. The reader can supply names with such suffixes as vale, dale and hill. The German name for mountain is *Berg* and this is found in Neuenberg (usually spelled in English Nuremberg), Heidelberg, Freiberg, and a number of others; in Denmark we have Frederiksberg, Esbjerg; in Norway, Bergen and Kongsberg. Just as the Dutch in South Africa use Kopje (i. e., Little Head, like our Little Round Top or Bald Knob, etc.), they say in Sweden: Jonkoping, Falkoping, Linkoping, Nykoping, Norrkoping.

Rosedale, Rosenthal, and Roosendaal all mean the valley of roses; Rooseveldt or rosefield must have been a place-name before it became a family name. Besides these fragrant appellatives we have very appetizing names of persons derived from names of towns; you may have heard of the Wieners, the Frankfurters, the Hamburgers, the Wurzburgers, the Schweitzers, and possibly of the Limburgers.

The naming of towns in the United States as in all recently settled lands, has been very irregular; most of the names where not fanciful are second-hand; hence the illustrations above were drawn largely from Central and Northern Europe. Why second-hand? Because settlers are apt to call their new home by the same name as the one they left, or they delight in names of large and important cities. Our maps are graced with New London, New Paris, New Berlin, New Vienna, New Rome, New Madrid, New Lisbon, etc. Sometimes names of European countries are used as New Britain, New Cambria, New Scotland, New Albion, New Sweden, New Germany, New Holland, or older towns in the United States as New Boston, New Buffalo, New Trenton, New Baltimore; or names from the Holy Land, as New Galilee, New Jerusalem, New Palestine, etc.

Many towns were named after great men: Washington,

Jefferson, Jackson, Madison, Monroe, Lincoln, etc. The names of great cities have been much in favor and therefore as might be expected, the name of the city of cities has been frequently used. There is a Rome in Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Mississippi, Missouri, New York, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, West Virginia, and Wisconsin; all taken together would be but a fraction of the Eternal City in the days of its glory. "See America first" is the slogan, and why not when everything is so conveniently situated. In Ohio without leaving the state you can visit London, Oxford, and Manchester, Paris, Versailles, and Marseilles, Athens and Sparta, Rome and Venice, Moscow and Warsaw, Jerusalem and Tokio; and this does not exhaust the possibilities. Ohio is not alone in this, other states are equally favored; for example, in Pennsylvania we have Athens and Rome, Bethlehem and Nazareth, Geneva and Luzerne, Nineveh and Damascus, Odessa and Pekin, etc. The truth is, we have been tremendous borrowers.

There are some names peculiarly American; as first of these must be mentioned Indian words. The map of Wisconsin shows the following: Cayuga, Kenosha, Manitowoc, Muscoda, Nashotah, Neosho, Oconomowoc, Oneida, Seneca, Waukesha, Wausau, Wauwatosa and many more. A method of coining names of border towns, which may be peculiar to this country, is that of compounding the names of the state concerned. In California Calzona is near the Arizona line, Calexico is on the Mexican border; Kanorado, Kan., is on the Colorado border; Texarkana, Ark., is on the Texas line. A case of three in one is found in Kenova, W. Va., which looks like an Italian proper name such as Canova. A glance at the map will show that its situation (between three states) is the key to its name; Kyova, Okyva or Vakyo might do as well, but the name is Ken-O-Va.

THE LITTLE END OF HAWAII

By Vaughan MacCaughey
College of Hawaii, Honolulu

THE Hawaiian Islands have risen rapidly in world importance. First, as the supreme mid-Pacific naval base of the United States. Second, as a vital link in all that knits together the Oriental and Occidental civilizations bordering the greatest Ocean. Since the discovery of Hawaii in 1772 by the famous Captain Cook, the successive events of world history have destined this isolated archipelago to an increasingly prominent position in the onward march of civilization in the Pacific. The voluminous

literature, both technical and popular, which makes Hawaii its central theme, deals almost exclusively with the eastern, inhabited end of the group. The islands that comprise this part are large and mountainous. They constitute the seat of the industrial and political life of the Territory. They support luxuriant tropical forests. Hawaii, the easternmost island, is larger than all the others taken together.

The western extension of the chain is apparently insignificant. It is the little end. Its sparse, dotted line of islets, reefs, and shoals, stretches eighteen hundred miles Asia-ward from the main group. The combined land area of these microscopic isles is only six square miles. Their interest to natural science, however, is in no way proportionate to their size. Moreover, their utilitarian value is vastly greater than any superficial glance at the map would indicate. Midway Island, a coral ring six miles in diameter, and averaging five feet high by twenty feet wide, encloses a sand island utilized as a relay station for the great trans-Pacific cable. Laysan was for many years an important source of guano fertilizer, plumes, and eggs. In the mining days San Francisco was a market for huge quantities of Laysan sea-birds' eggs. The warm banks and shoals of the series teem with marine life and constitute important fishing grounds. Japanese power-sampans bring weekly to Honolulu thousands of pounds of choice fish and turtle caught in the western waters.

The names of these dots,—and on the maps they seem to be more name than land,—are suggestive of sea-yarns and the tragedies of the deep. In 1805 Captain Lisiansky in the Russian schooner *Neva* stranded on the reefs of the island that now bears his name. Pearl and Hermes Reef caused the wreck of two whaling ships on the same night in 1822, within ten miles of each other. In 1872 Captain Dowsett, in the whaling ship *Kamehameha* was wrecked on Dowsett's Reef. The French Frigates Shoal was discovered by the noted navigator La Perouse, in 1786, and named by him in honor of his two ships. Necker Island was also discovered by him, and named for a great French statesman. The entire series, named in order from east to west, is: Ninoa, Necker, French Frigates Shoal, Gardner, Dowsett's Reef, Maro Reef, Laysan, Lisianski, Pearl and Hermes Reef, Midway, Ocean.

These lonely surf-rimmed isles are of profound geologic significance. They are the last visible remnants of a gigantic, subsiding mountain range. The highest summits were volcanic, like those to the east. The tiny western isles are surf-battered fragments of slowly sinking craters. The islands have been classified as to structure, and degree of subsidence. Nihoa, Necker,

French Frigates, and Gardner are eroded volcanic blocks, from 170 to 900 feet in height, steep walled, rimmed by heavy surf, and inaccessible except in the calmest seas. Their arid cliffs resound with the hoarse cries of myriad sea birds.

Laysan and Lisianski are elevated (45-55 feet) coral islands with fringing reef. Pearl and Hermes, Midway, and Ocean, are typical coral atolls, like "garlands on a summer sea." Numerous sand islands are enclosed in their shallow lagoons. Maro and Dowsett's reefs have visible surf, but no exposed coral. There are several shoals (Frost, Brooks, and Gambia), from twelve to fourteen fathoms below the surface of the ocean.

Slowly, imperceptibly, through the long ages these westward islands have been sinking,—inexorably drawn down into their vast eternal grave. The high islands to the east have slowly heaped themselves above the sea. Their fiery craters unceasingly piled lava flood, rock sheet upon rock sheet. The proud snowy summit of Mauna Kea now rises fourteen thousand feet above the glittering Pacific. Hawaii, the island that bears Mauna Kea, is still alive and growing. Scientists now peering into the boiling lava cauldron of Kilauea, predict a great lava flow in the immediate future.* A strange, abyssal contrast,—these barren, sun-scorched, tide-swept atolls, white fragments of gigantic sunken skeletons,—and the reverberating lava lake, with incandescent fire fountains, crowning the colossal dome of frigid Mauna Loa!

The plant and animal life on these remote specks of coral is of rare interest to the naturalist. A lone species of native palm occurs only in an arid gulch of Nihoa. Laysan is overgrown with low bushes, brush, weeds, and grass. The Hawaiian seal is plentiful on many of the isles. In the "fifties" numerous sealing expeditions were made; one ship returned to Honolulu with 1500 skins and 240 barrels of oil. The green sea-turtle uses the coral beaches for its nesting grounds, and is common. All the isles abound with marine bird life; to quote Professor W. A. Bryan "Laysan is perhaps the largest sea-bird colony in the tropics, and its teeming hordes of bird inhabitants may justly claim for it a place as one of the great natural wonders of the world. . . . I have estimated from personal observation and data gathered for the purpose that more than ten million birds formerly visited Laysan Island each year. . . . Naturally the struggle for existence, often for mere nest room, is intense. The air, the vegetation, the earth—all literally swarm with bird life. Almost every inch of land down to the water's edge is occupied." These isles now constitute a federal bird reservation.

As the vast reaches of the Pacific continue to bulk larger and

*It has since occurred,—May, 1916.

larger in world affairs, and as facilities for inter-island travel are multiplied, these remote infinitesimal specks of lava and coral, with their wealth of suggestion for scientific research, will increasingly command more attention than hitherto has been granted them.

CORK

"AS light as cork," is a common saying. As elastic as cork, as impermeable as cork, or as poor a conductor of heat and sound as cork, would be equally apt expressions, for all these qualities are combined to a high degree in this one substance. All attempts to find a substitute possessing this combination of qualities have been fruitless.

Uses.—A low specific density and its impermeability by liquids makes cork especially well adapted for floats and life saving apparatus. Cork buoys mark channels for boats; flat cork buoys are suspended from the stern of vessels to be used in case some one falls overboard; cork mattresses on shipboard have been found valuable in case of shipwreck.

To protect the feet from the wet and cold, a thin layer of cork in the soles of the shoes is advantageous, and if a limb has been amputated, there is no more desirable substitute than a cork limb. In Spain, houses are sometimes lined with cork to keep out the moisture, the heat or the cold. Steam pipes and hot water reservoirs are jacketed with cork to prevent the escape of heat. Cork hats are worn in tropical countries to prevent sunstroke.

The lightness and elasticity of cork make the parings of cork unsurpassed packing material for fragile articles. Elasticity and impermeability make cork most desirable for bottle stoppers. Malaga grapes are packed in cork "sawdust" and shipped around the world in perfect condition. Since cork is a poor conductor of sound it is put into floors of hospitals and apartment houses, or it may be used as a carpet. Linoleum is made by spreading a paste of oxidized cork and linseed oil upon canvass. Distilled cork parings and waste yield an illuminating gas which rivals coal gas. Spanish black, so valuable in painting, is derived from carbonized cork parings. There is scarcely an industry where cork is not a desirable or necessary factor.

Where produced.—Cork is the bark of the cork oak, which grows in all the Mediterranean countries. Numerous attempts have been made to produce cork in other countries, but all have failed. Cork growing has been tried twice in the United States, in Mississippi and in California; the trees grew rapidly, but the

cork was found to be inferior and almost valueless. The largest producers of cork are Portugal, Spain, Tunis, and Algeria. The European cork area covers nearly all of Portugal and the Spanish provinces of Andalusia, Estremadura and parts of Catalonia; irrigation is necessary. In Portugal there are over 900,000 acres and in Spain about 625,000 acres of cork oak groves. The tree has been found to flourish best at an altitude of 1600 to 3000 feet, with a mean average temperature of 55° Fahrenheit. The northern limit is at 45°. It usually grows in company with firs and evergreen oaks, although there are forests in Tunis entirely of cork oak.

How collected.—The Spanish law requires that no cork oak shall be stripped of its bark until it measures 16 inches in circumference, a size which it attains when it is about 22 years old. The process of stripping takes place in July or August; with a hatchet, two incisions are made around the trunk, one at the foot of the tree and the other just below the main branches. These incisions are connected by several longitudinal cuts. The bark may then be removed immediately, but if it is left on the tree a while, it will loosen and can then be removed more easily.

Preparation of bark for market.—After stripping, the bark is soaked in hot water and then placed over a fire which blackens the outer surface. This makes it smooth and the cracks and holes are filled with dirt and soot. The pieces are then loaded with weights to make them flat and are then stacked and dried and later packed for exportation. After eight or ten years, the stripping may be repeated. A better quality of cork is obtained from the second stripping.

Manufactures.—Cork manufactures play an important part in Spain, especially in Andalusia. In the United States, there were 62 factories in 1909. The imported raw material amounted to $3,435,000 and the value of the manufactured article was $5,940,000.

ALBERTINE METZNER.

NEWS NOTES

RESIGNATION OF PROFESSOR R. E. DODGE

PROFESSOR R. E. Dodge, for twenty years connected with the Department of Geography of the Teachers College, New York, has resigned from active teaching and will devote himself to lines of study, writing, and editorial work in the field of geography. Every friend of geography in the United States would regret Professor Dodge's withdrawal from teaching if it meant

his withdrawal from active work in geography. Happily this is not the case; it is entirely possible that his services will be as valuable and his influence upon the teaching of geography quite as great as if he had continued in the teaching profession. Through his series of Elementary Geographies, his excellent book (in collaboration with Miss Kirchwey) on the Teaching of Geography, his editorial management of the Journal of Geography for many years, and his wide influence as a teacher and lecturer, Professor Dodge has rendered splendid service to the cause of geography in the United States. The JOURNAL wishes him a score of years more of fruitful and joyous endeavor.

NORTH CAROLINA ASSOCIATION OF GEOGRAPHY TEACHERS

At the instance of the State Council of Geography Teachers, formed and at work several months ago, the University of North Carolina held during its summer term three conferences on the teaching of geography. These conferences were led by Professor Collier Cobb of the National Council of Geography Teachers.

The attendance at the first meeting was more than 300. The North Carolina Association of Geography Teachers was organized at the beginning of the third conference with the following officers: Prof. Collier Cobb, president; Supt. I. C. Griffin of Shelby, first vice-president; Miss Hester Struthers of Columbus county, second vice-president; Mr. John E. Smith, secretary and treasurer.

The North Carolina State Council, as at present organized, consists of Prof. Collier Cobb, University of North Carolina, Chairman; H. E. Austin, East Carolina Training School, Greenville; John Jay Blair, Superintendent City Schools, Wilmington; L. C. Brogden, State Department of Education, Raleigh; E. W. Gudger, State Normal College, Greensboro; E. B. Kimsey, City High School, Asheville; S. L. Sheep, Superintendent of Schools, Marion; and Miss Kate C. Shipp, Fassifern School, Hendersonville.

CHICAGO MEETING OF GEOGRAPHY TEACHERS

During the Summer Session of the University of Chicago, a meeting in the interests of the National and the Illinois Councils of Geography Teachers was held in Rosenwald Hall, the fine new home of the Departments of Geography and Geology of the University of Chicago. Miss Mabel Stark, chairman of the Illinois Council, arranged for the meeting and presided. Professor R. D. Salisbury, Professor R. H. Whitbeck and Miss Stark spoke on the needs of geography and the purposes of the Council. Teachers from about twenty different states were present and a large number enrolled in the National Council and the Illinois Council.

University and Normal School Notes

Mr. Charles Colby, recently of the Peabody College for Teachers, Nashville, Tenn., has resigned to accept an instructorship in Geography at the University of Chicago.

Mr. Herbert Bassett, who was on leave of absence from the Macomb, Ill., Normal School last year doing graduate work for his master's degree in Geography at the University of Wisconsin, will again take up his work at Macomb. Mr. E. L. Jay, formerly an assistant in the Department of Geography at Wisconsin, has been added to the geography staff of the Macomb Normal School.

Mr. Wellington Jones of the Department of Geography, University of Chicago, is travelling in eastern Asia in preparation for the giving of courses in the Geography of Asia. Prof. W. S. Tower of the same department is conducting a class on an excursion down the St. Lawrence Valley and into the Maritime Provinces of Canada.

Mr. George Simpson (Univ. of Wis. '16) has been appointed head of the Department of Geography of the new Normal School at Eau Claire, Wis.

Professor Lawrence Martin of the University of Wisconsin, assisted by Mr. F. T. Thwaites, had a class of 22 men doing field work in Geology and Geography in the Devil's Lake region (Wis.) during the month of August.

JAPANESE NOTES

Prosperity in Japan

The economic and commercial prosperity brought to Japan by the war in Europe continues unabated. Trade in Japan was at a low ebb when the war broke out, and the last five months of 1914 made a very depressing commercial and industrial record. But orders for munitions began to come in and these were followed by inquiries for other merchandise. Japanese tonnage became much in demand, especially after the Pacific Mail steamers were withdrawn. While orders from allied and friendly powers were being executed, Japan found other markets opening for her trade, so that her manufacturers were unable to cope with the demand. Hence it came about that last year the value of exports reached the record total of 708 million yen,* the last highest being in 1913 when the total was 632 millions. Imports for the year were valued at 532 millions, as compared with 595 millions in 1914, 729 millions in 1913, and 618 millions in 1912. The excess of 175 millions of exports over imports is a record; only four times within the last twenty years have exports exceeded imports. It is fully expected that these figures of 1915 will be surpassed during the current year, and recent statistics of the for-

eign trade of Yokohama are cited to sustain this view.—[*Jour. Am. Asiatic Assn.*]

Japan and the Philippines

With the discussion of the Philippine independence bill in the legislature at Washington much attention has been paid to the possible attitude of the Japanese towards the islands after the withdrawal of American authority therefrom. Some critics have openly declared that Japan is waiting for the first convenient opportunity to grab the Philippines.

While Japan is certainly desirous of extending her interests in the southeastern Pacific, there are certain points upon which Americans as well as Filipinos must be thoroughly informed if they are not to make serious mistakes in dealing with the Japanese.

It is not necessary that Japan should, in order to extend her influence and interest in the south, absorb the lands now under the American, Dutch or French flags. Confining our discussion to the Philippines, it must be emphasized that Japan does not covet the territory. She would, of course, take it if she could get it for a song. It is absurd to tell Americans that the Japanese would not take the Philippines even for a gift. She would be glad to accept it, if America, with the unreserved consent of the Filipinos, were to hand it over to the Japanese without regret or reluctance. But the Japanese know the Philippine situation too well to fancy even for a moment that the islands can be had for the asking. They know that an attempt to acquire the territory would cause them endless trouble and countless expenditure, for the Filipinos who have been opposing the American rule established over them would even more strenuously oppose Japanese rule. Certainly the Japanese are not foolish enough to think that such a game is worth the candle.

The idea of converting the territory into an integral part of the Japanese Empire, therefore, seems highly impractical and out of the question. But if Japan ever were to acquire the Philippines, the acquisition would be made only under one of two conditions. First, she would not decline to become the mistress of the country if the Filipinos would willingly place themselves under the reign of the Mikado. Business sense forbids Japan to fight for the absorption of the islands at any considerable cost of blood and money. Secondly, Japan might be compelled to annex the country, if its internal conditions after the withdrawal of American authority were such as to invite the aggression of ambitious European powers.

*The yen equals about 50 cents.

The second point is the more vital and must be driven home to the reader. After her bitter experience in China and Korea where she had to confront on the field of battle two European military powers one after the other, Japan would not permit any third power to encroach upon the territorial rights of the Philippines after the benevolent government of the United States has become a thing of the past. Even American suzerainty, with all its professed altruism and its unmistakably well-meaning policy, was, we must confess, not entirely welcome to the Japanese who saw an imperialistic tendency in the westward expansion of American territory. Japan did not raise a voice against the American occupation of the Philippines only because the overwhelming majority of the Mikado's subjects had been convinced that America was her best friend and harbored no sinister designs either upon the Philippines or upon her. Their knowledge that the establishment of American rule in the Far East was incompatible with the cardinal principles of the Monroe Doctrine did not prevent them from according hearty approval of her advent in the Philippines. Had the America of 1899 been as unfriendly towards Japan as the America of today, a different story might have been written, for under such circumstances Japan would not have permitted American domination of the Philippines to pass unchallenged.

What Japan really wants in the Philippines is not territorial rights, but economic privileges such as have been enjoyed by her equally with other nations.

After all has been said and done, we must not forget that the peoples of the Far East stand upon common ground. In the years to come they must by mutual co-operation establish and enforce something of a Monroe Doctrine for their own world. To consume themselves in petty suspicion and disgraceful quarrel is to toll their own knell. This sentiment of ours no nation can better understand and appreciate than does the United States, whose policy in the Americas has been to keep the designing powers of Europe at arm's length.—[K. K. Kawakmi, in *The Japanese-American News.*]

Japan's Policy Toward China

It is at the same time incumbent on the part of Japan to make clear to the American people her Chinese policy. Of late much has been talked about Japan's foul designs on China. Let us consider what would be her fundamental policy toward China as it is dictated by her best interests. It should be and is no other than to cement the bond of amity and friendship between the two nations and to safeguard thereby their common interests. The well-known policy of maintaining China's integrity and in-

dependence and the "open door" remains today, of course, the same as it was during the days of John Hay and Jutaro Komura. Japan's Chinese policy, therefore, does not in the least run counter to that of America. True, this policy does not spring from pure altruism on the part of Japan, but from her enlightened self-interest. For it should be apparent even to outsiders that European encroachment upon China would prove extremely prejudicial to Japan's interests, bringing European politics to her very threshold and even endangering her national existence, while the closing of China's door would spell disaster to Japanese commerce and enterprise, which have no better prospect of future development elsewhere than in China. It is, therefore, easy to see that to win China's friendship and to stand together as fast friends in the unfolding of their common destiny would surely have been the corner-stone of Japan's policy toward China. Unfortunately the course each followed ran in an opposite direction. Against the progressive policy of Japan there stood long the Great Wall of self-conceit, bigotry, and prejudice of the mandarins. They remained obdurate to the influence of Western civilization until they saw their capital looted and sacked twice within half a century and their empire shaken to its very foundation.

Had China followed at the time she first met the West the same course and policy as Japan, that is to say, to win her place among nations by her own effort instead of depending for her security upon her size and traditions, or upon the grace of other Powers, then the Far Eastern history of the last few decades would have been a totally different one. "The ultimate aim of our China policy," says Count Okuma, "has been no other than to awaken her from this morbid torpor in order to insure her future prosperity and avoid conflict with European nations." Over and over Japan's friendly warning to China has been given; time and again it has been left unheeded. Nay, even the grave disasters that repeatedly overtook China have not succeeded in awakening her from lethargy. The sad and humiliating spectacles that meet one at every turn in China at the Legation Quarter of Peking where foreign troops are quartered, making the independence of China a sham, at the foreign settlements of Tientsin, Shanghai, Hankow, wherein China's sovereignty is overridden, and are established "republics within the Republic"—*imperium in imperio*—these also have failed to make China bestir herself.

Under the circumstances the utmost Japan could do was to adopt every legitimate means to safeguard her interests and to prevent and forestall European aggression upon her neighbor.